

This lesson is part of a larger, comprehensive school garden guide called **Minnesota School Gardens: A Guide to Gardening and Plant Science** developed by Minnesota Agriculture in the Classroom in 2013. The entire guide is available at www.mda.state.mn.us/maitc.



Grade

Elementary K-3

Materials/Preparation

- ☐ Handout A – Plant Illustrations – one per student
- ☐ Crayons or markers
- ☐ Scissors
- ☐ Staples, glue sticks or tape
- ☐ Samples of fruits and vegetables that represent different plant parts. (When possible, save one example of each of the following. Wash and cut the rest into bite-sized samples for tasting: fruit or flower – apples, oranges, grapes, kiwi, strawberries, broccoli, cauliflower; seed or flower – peas in a pod, sunflower or pumpkin seed snacks, popcorn; leaf – lettuce; stem – celery; root – carrot, radishes.)
- ☐ Tray for samples
- ☐ Vegetable dip
- ☐ Tub of cream cheese mixed with equal amount of brown sugar for fruit dip
- ☐ Spoons for dips
- ☐ Small paper plates – one per student
- ☐ Napkins – one per student



Plant Parts Become Me

Minnesota K-12 Academic Standards

Science	0.4.1.1 1.4.1.1 2.4.1.1	Living things are diverse with many different observable characteristics.
Science	3.4.1.1 5.4.1.1	Living things are diverse with many different characteristics that enable them to grow, reproduce and survive.

Summary/Overview

Students begin by reviewing the main parts of plants through a role-play activity. They design their own plants and compare the variety of their creations to those of their classmates. Students identify and taste fruits and vegetables that come from different plant parts.

Garden Connection

Roots, stems, leaves, flowers make up the foods we harvest from gardens.

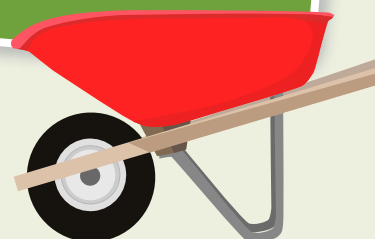
Background Information

Plants have four basic parts: roots, stems, leaves, and flowers. Roots anchor and support plants as well as absorb nutrients and water. Roots also store excess food produced by the plant. Stems support leaves and flowers. They also act as a transportation system moving water and nutrients up from the roots and taking excess food produced by the plant down to the roots. The main job of leaves is to create food and energy through the process of photosynthesis. Finally, flowers provide plants a way to reproduce. The brightly colored petals attract insects, which aid in pollination. Pollination leads to fertilized eggs that create new seeds.

While each plant part is crucial to the growth and development of the plant, humans also benefit from these parts. The fruits and vegetables we eat come from the four main parts of a plant as well as from the seeds. Edible roots include carrots and radishes. Asparagus, celery, and rhubarb are stems. Lettuce is an edible leaf. Most of the flowers we eat have turned into fruits. Fruits are the fleshy produce containing one or more seeds. Apples, oranges, grapes, kiwi, strawberries, broccoli, and cauliflower are all examples of flowers or flowers that have grown into fruit. Edible seeds include peas in a pod, sunflower or pumpkin seeds, and popcorn.

Fun Fact

Carrots are members of the parsley family, characterized by the feathery green leaves. Other members include parsnips, fennel, dill, and celery.



Objectives

- Identify the four parts of plants and their functions.
- Make connections between plants and personal food choices.

Procedure

Interest Approach

Guide students in a role-play activity where they pretend to be a plant. Start by pretending that it is spring and you are seeds that have been planted in the ground. Curl up on the floor or “ground” like a seed in our garden. You are underground. The soil or ground is all around you. Spring rains come down and soften the seed coat so that your roots start to grow into the soil.

Ask students, “What part of your body can you use to become roots?”

Feet and legs are the roots growing out of the seed and pushing down into the soil. Roots are the first plant part to grow out of seeds. Wiggle your toes as your roots start growing out of the seed.

Ask students, “What part of your body is the stem?”

Your body is the stem. Wiggle your bottom, shoulders, and elbows. Pop up your head and start growing tall. Stand up tall and straight so that your stem is growing above the ground. (Above ground is the height of desks or tables.)

Ask students, “What parts of your body could be the leaves and branches?”

Your arms could be branches and your hands and fingers could be leaves. Put your arms out away from your body and wiggle your hands and fingers as if they were leaves fluttering in the breeze. Reach toward the sky to catch the sun’s rays.

Stand up straight with your head held high and a big smile on your face because your head is a beautiful flower on top of a sturdy stem. Move it back and forth like it is enjoying the sunshine and the breeze.

Summary of Content and Teaching Strategies

Groundwork: Designing Plants

Distribute Handout A. Have students look at the pictures on the activity sheet and identify the four parts of a plant. Every picture in the first column is a root. Every picture in the second column shows a stem and leaves. Every picture in the third column is a flower. Explain that flowers develop into fruit that contains seeds.

Provide crayons or markers for students to color pictures of the plant parts on Handout A. Students can design their own plants by carefully cutting out the boxes with the pictures. Mix them up and design a favorite combination to make plants, each with a top, middle, and bottom in the correct order.

After the students have colored, cut, and lined up their plants, they attach the parts in any of the following ways.

Staple or glue them on paint stir sticks so they can carry them around like stick puppets and pretend to plant them in a flowerpot in the room.

- Glue them on colorful construction paper to hang around the room.
- Tape them together in a strip and hang them around the room.

Have students name their new flowers and tell the rest of the class about them. Discuss similarities and differences.

- How many people put the same combinations of flowers, leaves, and roots together?
- How many different combinations do we have?
- How many are exactly the same?

Exploration

Edible Parts of Plants

Review the four parts of plants. Make four columns on the board with these headings:

- flowers
- leaves
- stems
- roots

If desired, flowers can be further subdivided into fruits and seeds.

Before the following activity, wash and cut fruit and vegetable plant part samples and put them on a large tray. Prepare the dips for spooning out onto the students' plates.

Ask students what fruits and vegetables they have eaten yesterday and today. Have them list what they ate under columns on the board labeled roots, stems, leaves, and flowers. Explain that fruits and vegetables are important to our health because they contain vitamins and minerals that help keep us healthy. They also contain fiber to help clean out our bodies. Eating a variety of vegetables and fruits of different colors is a healthy eating habit.

Have the students wash their hands in preparation to try some vegetables and fruits. Show them actual samples of roots – an entire carrot; stems – a celery stalk but remind them it is really a leaf stem; leaves – a lettuce leaf; and flowers – an entire apple or orange. Have them guess what they are and what part of a plant they come from. Give each student a small paper plate and a napkin. Show the tray of fruits and vegetables and encourage the students to try at least two to three different fruits and vegetables. Offer ranch dressing and cream cheese mixed with brown sugar to use as dips. The dips may encourage them to try new vegetables and fruits. If choosing is difficult for your students, prepare sample plates for them. Optional: Challenge students to try one root, one stem, one leaf, and one flower.

Discuss and describe the differences in flavor, texture, and color between the root, stem, leaf, and flower.



Sources/Credits

Adapted from Growing in the Garden Elementary Curriculum that Grows with the Child written by the Iowa 4-H Development Program and revised in June 2012. The curriculum can be purchased from the Iowa State Extension Office <http://www.extension.iastate.edu/4h/page/curricula-info-ordering>

Review/Summary

Divide the class into four groups and assign each group one of the foods listed below. Some foods may be assigned to more than one group; add your own food ideas to the list. Students discuss the vegetables or fruits that are in each food and the plant part they come from. Have groups report back to the class. You may want to write the ingredients on the board or provide students with a labeled colored picture of their food.

- **Pizza** – onions (leaves); tomatoes, peppers, olives (fruits); crust (wheat seeds)
- **Hamburger** – onion, lettuce (leaves); tomato, catsup (fruit); mustard (seeds); bun (wheat seeds, sesame seeds)
- **Vegetable soup** – onions, celery (leaves); potato (stem); tomatoes, pepper, peas, beans, okra (fruit); carrots (roots)
- **Spaghetti and sauce** – tomatoes, peppers (fruit); onions (leaves); pasta (wheat seeds)

Modifications/Extensions

Get “Dirt Made My Lunch or Singing in Our Garden” CD by the Banana Slug String Band (bananaslugstringband.com). After playing the song, ask students to identify the six parts of the plant listed in the song. Ask them what each part is doing in the song.

Read *Stone Soup* by Marcia Brown. Make cards for each vegetable mentioned in the book and distribute to students. As you read, have students bring their cards to the front when each vegetable is read. They can sort the vegetables by plant parts at the front of the room.

Name _____



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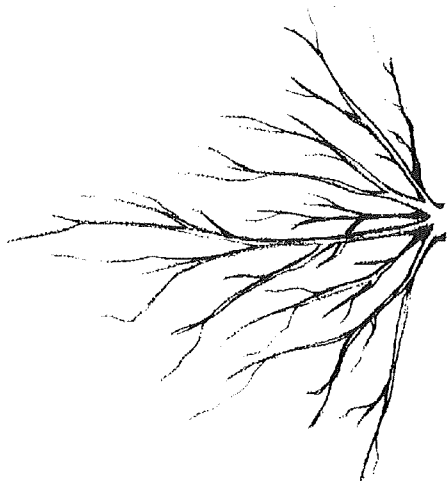
Roots, Stems, Leaves, and Flowers

ACTIVITY SHEET
PLANT PARTS BECOME ME!

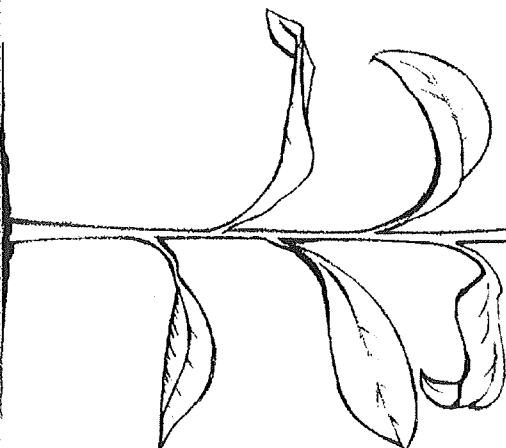
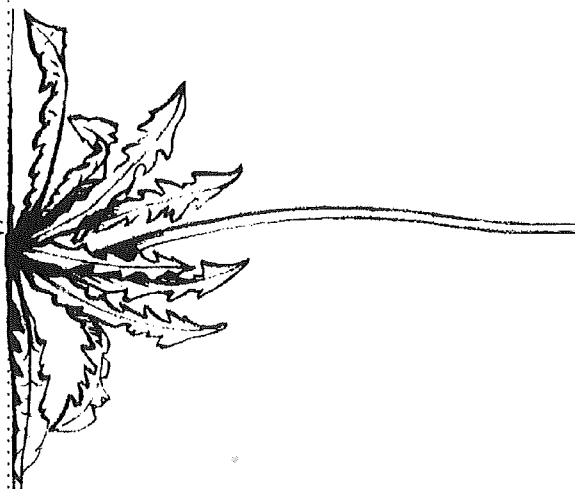
4-H Youth Development
4H-905A3 | Revised June 2012



Roots



Stems and Leaves



Flowers

